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continue an institution of indolent and unlearned men, commanding contributions as they ply from door to door, and subsisting entirely upon the forced charity of the public. To this day their minor crimes subject them to the punishment of being forced to cut grass and boughs of trees to supply the white elephant with food; whilst any breach of the laws of celibacy is punished with a certain and a cruel death. Even now, the citizens traffic in their own daughters, who are sold publicly for a few dollars, or bartered for other merchandise. The trumpet still sounds after the king's breakfast, according permission to all other subjects to follow the royal example, and fall to and eat. Men, women, and children are still almost amphibious, spending nearly half their time in the water. If the Siamese have advanced in anything, it is in the art of ship-building, and for any other little light or information diffused amongst them they are indebted to those few hardy pioneers of the Christian faith, the American missionaries, who for many years past have made their home amongst them; and, to give the Siamese their due, they have tolerated the presence of these excellent men far better than many other heathen states, especially the bordering one of Cochin China.

And now, in conclusion, let us take a brief review of the recent embassy, and draw a parallel between it and the mission to Paris in 1686. Although Siam had made little or no progress since the last embassy, the members of the present mission were not long left in doubt as to the immense strides Europe had taken in civilization. At the very first outset, they embarked upon a man-of-war steamer—perhaps the neatest and most compact model of what the wonderful art of steam could accomplish in this shape. The French embassy must have had very indifferent vessels, and their progress homeward probably occupied seven or eight months. Before the present embassy had long lost sight of Siam, they were landed at Singapore; before they had had time to rub their eyes and express astonishment at the many novelties that opened around them, they were spirited away past Penang—past Ceylon—and so on to Aden. Barely had their eyes recovered the painful glare from Aden's black rock, before they were thrust on Suez Sands, and whisked off in light omnibuses to Cairo's Grand City. Scarcely was their dignity here compromised by unscrupulous donkey boys, than they were whirled off by railway-travelling, and shot out at Alexandria, to be again ruffled by the unfeeling proprietors of asses.

Did they miss their esteemed garlic pickles all this while? were they at a loss for betel nut? I really cannot say, but no doubt the steward of the steam-vessel made them as comfortable as possible; and though beef was a forbidden thing, there was abundance of other good cheer to gladden their illustrious hearts.

And now, as we trace their path onward, we find that at Malta there was some slight demonstration in honour of their Excellencies. At Plymouth the authorities turned out to do them honour. The next thing we heard of them was that they were quietly established at Claridge's hotel; and some weeks afterwards, a paragraph in the "Times" informed us that her Majesty at Windsor had received the Siamese ambassadors; and then followed a list of the costly presents sent by the king to the Queen of England. We have heard of no tremendous processions, no rush of aristocratic lords and ladies to welcome the illustrious strangers, no deafening roar of cannon, or such like demonstrations. Many gentlemen went to visit their Excellencies—not out of curiosity, however; these visitors were chiefly mercantile men and manufacturers; and bright visions would open up before them as they surveyed the costly silks that the ambassadors were decked in, and they meditated on the possibility of bartering Manchester goods for the rich products of Siam, at no distant day. Occasionally a mob, gathered round a jeweller's, with a few policemen at the door, would cause the curious to pause and peep, and what they saw convinced them that there really was such an extraordinary thing as a Siamese embassy in London.

It is to be hoped that their Excellencies possess sound sense and good judgment, and can appreciate a quiet hearty reception better than a roaring, boisterous, empty display. The old proverb of "Great cry and little wool" was well exemplified in the Siamese mission to France of 1686. At present the two kings are said to be educated, tolerant men, possessing a fluent knowledge of the English language, and we have a consul and three assistant interpreters residing at Bangkok. To possess a knowledge of the language of the people amongst whom we reside, is to arm one's self with a power which, if judiciously used, is superior to mere physical force. Let us hope that these embassies, so propitiously commenced, may terminate as favourably as is to be expected from the present aspect of affairs; that these friendly interchanges may lead to free and unrestricted commerce, which, once firmly established, will be the pioneer to brighter and better days for that now benighted kingdom.

If the present embassy, like its predecessors of 1686, are busily compiling notes of what they have heard and seen in England, and what they have since witnessed in France—after expressing their astonishment at the ignorance of English ladies in the art of swimming, describing their visit to the Leviathan, etc., we trust they will not omit to give due credit to English courtesy and forbearance; underlining the paragraph stating that, despite the law of the land, and the bye-law of companies, they were permitted to persist in smoking in the presence of Royalty, and inside of first-class railway carriages.

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A DOSE OF PHYSIC.

Doses of physic are proverbially disagreeable. We make wry faces at them, though they are meant to do us good. The words "doctor's stuff" have become bye-words for something unpleasant. What right have I, therefore, to prescribe unpleasant stuff for the hale and hearty ladies and gentlemen who read the "Leisure Hour?"

For this sufficient reason—that more than half the unpleasantness which people associate with physic is referable to false ideas as to the sources

29th of July, and regaled them with a speech of more than a quarter of an hour's duration. Next day they moved on to Versailles, and thence to the house of the Abbé de Saint Genevieve at Bernay, where they took up their residence until the day appointed for their formal entry into Paris. During this interval, it would seem that the ambassadors had very little leisure time on hand. The delay in their presentation at court arose from the non-arrival of the heavy baggage shipped to Havre, which contained the presents from the king of Siam (then valued at £30,000), to Louis XIV, and without which, according to Siamese etiquette, no presentation could take place. Nearly thirty days elapsed before this baggage arrived; but in that interval the envoys were inundated with visitors from Paris and Versailles. All the notables either came in person or sent to congratulate them upon their safe arrival. Amongst these was M. Bonneuil, introducer of ambassadors. The lady visitors were very numerous and very inquisitive, the existence of a law for plurality of wives in Siam being amongst them an inexhaustible theme of conversation. They quizzed the ambassadors upon this subject, and the ambassadors, we are informed, retorted their badinage in a way which astonished even the wits of that day.

The 22nd of August was the day fixed upon for the public entry of the Siamese embassy into Paris; but on that day they did not present their credentials to the king. On this subject we will not be prolix. Suffice it to say that there were sixty carriages, each drawn by six horses, and containing one male representative of the distinguished owners, in addition to the coach of the dauphins, the carriages of the princes of the blood royal, besides those of the ministers and other great officers of state. In short, the display is said to have been unrivalled in those days. The king's illness prevented their immediate reception, but during the interval they were entertained at state expense with princely magnificence at the Hôtel des Ambassadeurs. The anniversary of the procession of the Roman Catholic festival of the Day of Assumption chancing to occur, the ambassadors visited Notre Dame, and saw so much to surprise and interest them there, that they kept four secretaries at work that evening, reducing their notes into order. Throughout, they seem to have evinced an astonishing thirst for the acquisition of useful and novel information, which, however, in the lapse of years, has unhappily led to no beneficial results.

Of the procession itself, we hear that on the day appointed for the reception (the 1st of September), the Duc de Feuillade, with the king's coaches, arrived early in the morning, to convey the ambassadors to Versailles. The French and Swiss guards, in full uniform, with flags flying, etc. were drawn up in the great courtyard through which the illustrious visitors passed, alighting at the Salle de Descente, where ambassadors were accustomed to await their audience. A breakfast was here served, which the Siamese declined (to the surprise of the "special correspondent"), preferring to avail themselves of the opportunity to indulge in—a wash. After this, they occupied themselves about their state or court toilet. The first and second ambassadors wore gold coronets, set round with flowers of rubies and leaves of gold. The third was shorn of these costly jewels, being of an inferior rank. As soon as the king had ascended his throne of silver, dressed in a gorgeous suit, blazing with jewels (the estimated value of which amounted to several millions of livres), and surrounded by all the paraphernalia of his court, the embassy were admitted to an interview. The king of Siam's autograph was protected from the sun's rays by four parasols, and borne aloft in the air by twelve of the Swiss guard.

The ambassadors, on catching a first sight of the king, raised their joined hands on high, and thus, after the custom of their country, saluted him with three profound reverences. At the end of the lane of courtiers, the suite filed off left and right, and, prostrating themselves to the ground, averted their heads from the throne, as though dazzled by its splendour; "and," says the "Mercure," "in this posture they would have continued, had not the king been graciously pleased to permit them to look on him, saying that they had come too far to be deprived of so slight a gratification." With many more such fulsome compliments and absurdities, the embassy was received and dismissed, after partaking of a banquet served in magnificent style. The upshot of all these ceremonials, and of the embassies to and fro, was that, when the Siamese legation returned to Siam, the first ambassador, backed by the native party, made null and void every article of the treaty by murdering Monsieur Constance (the French representative), and expelling the French troops from Siam.

One hundred and seventy years have elapsed since that date: our possessions in India have meanwhile been perpetually augmenting, and at the present time constitute a vast emporium of commerce; the still more distant empire of China has also for many years become a highway for European traffic; but Siam to this day remains almost a sealed country—a *terra incognito*. British enterprise, however, and the pushing efforts of our Manchester manufacturers, aided by the little light thrown upon the resources of this vast and wealthy kingdom from the pens of casual adventurous travellers who had penetrated thus far eastward, have at last, we hope, succeeded in invading the oyster-like seclusion of the king and people of Siam. That much mutual benefit must arise to both countries from unrestricted commercial intercourse, none can gainsay.

Siam, in almost every respect, is the same today as it was in 1686. The country still yields the same productions; there are still ivory and gamboge in abundance; spices are yet plentiful, and the sugar cane continues to flourish; but although its commerce has not in the slightest degree retrograded, it has not hitherto spread one jot. The valuable and immense resources of this kingdom have yet to be developed.

So, also, as concerns the manners, customs, and habits of the people. Their chief cities are still principally constructed of wood, which float by means of bamboo rafts on the river. The white elephant is still held in special veneration; their superstitions are as deeply rooted as ever, and their ignorance keeps pace with these superstitions. To this day the Talapoins, or priesthood, of physic—ideas which might have been justified in bygone times, though totally inadmissible now. Concealment often begets more terror than the fullest scrutiny; and I am sure it is thus with physic.

Any person who takes a glance at the contents of a druggist's shop will be likely to come away with exaggerated ideas of the number of original medicines. Practically, however, the really potent medicinal agents—those which a physician considers to be his sheet-anchors—those on which he especially relies in cases of emergency—are not so many. Each original medicine is frequently dressed up into many forms—dry for powders, moist and soft for pills, and fluid either by way of tincture, decoction, or infusion. Each of the chief agents of physic may thus assume many guises. But, besides the primary agents, there are what we may call *outside medicines*—things which are wholly, or almost wholly, devoid of energy, but are nevertheless valuable in imparting agreeable tastes, odours, or colours.

All three kingdoms of Nature—animal, vegetable, and mineral—contribute to the stores of our physic: the first, however, more sparingly than the others; so that, with the exception of the so-called Spanish flies, or cantharides—the effective agents in blistering salve, and which are frequently made into tincture, and administered internally—no physic-material of any great potency is derived from the animal kingdom. I will not even except musk and castoreum—the former a product of the musk deer, and the latter obtained from the beaver. Both had high medicinal qualities attributed to them formerly, and still have by some practitioners. Musk and castoreum are, however, not amongst the sheet-anchors of medicine.

Perhaps it would be ungrateful not to stretch a point, and give a passing word of recognition to the medicinal leech (*Hirudo officinalis*), though the function of this little animal be rather surgical than medical; and having stretched our courtesy thus far, let us pay our respects to the *Physeter macrocephalus,* from whose thick head we derive the bland and mollifying spermaceti, so useful in the manufacture of spermaceti ointment—a very proper application to blistered surfaces, but useless as respects inward bruises. Considerably indebted, too, are medical men to pigs and sheep—the one for lard and the other for suet; both of which are largely employed in the formation of various salves and ointments. But, considered in the sense of a powerful medicine, and not as a mere agent for enveloping or conveying it, cantharides, or Spanish flies, have unquestionably the *place d'honneur* amongst medicine-yielding animals. Cantharides are a very energetic drug; the energy dependent upon the presence of a property, which, by the way, is a violent poison. It is an extraordinary fact that, although there are animal poisons in great number and of tremendous activity—such, for example, as the poison of snakes, and of hydrophobic animals—cantharidine, as far as I can remember, is the only animal poison amenable to chemical tests. So, cantharides, or Spanish flies, are, medicinally considered, important creatures. It is interesting to know, therefore, that they do not come from Spain, but chiefly from the south of Russia. They are Muscovites: no wonder they make us smart so!

Enter we now into the domain of the great vegetable kingdom, to cast a glance at the medical resources thereto belonging. But wherefore is it, I first would ask, that every inventor of a patent pill hastens to assure the public, by reckless squandering of printers' ink on double-leaded advertisements, that his pills are vegetable pills, containing not one atom of any mineral compound? Why is it the public accept this assurance as synonymous with innocence? I ask for information, that some person may answer me—not that *I* may reply to *myself.* I never could discover the reason for thus associating the notion of innocence with vegetables, and looking on mineral bodies as the *bêtes noires* of the pharmacopœia. Compared, in respect of potency, with all that either art or nature developes out of the mineral world, the vegetable kingdom as far transcends the latter as a sixty-horse power steam-engine transcends the power of a smoke-jack. Between the most potent mineral agents and the most potent vegetable ones—understanding by potency relative power of influencing the human constitution—the difference is so enormous, that to apply the attribute of superior innocence to vegetables is something preposterous. Some readers, perhaps, there are, who will remind me that I have laid myself under promise to deal with medical bodies—not poisonous ones. In truth, however, the terms are nearly, if not quite, identical. Medicinal agency assumes the existence of power; poisonous agency likewise. Dependent upon the circumstance whether the power be judiciously or injudiciously applied, one and the same agent may be a medicine or a poison.

The greater number of medicinal vegetables come from abroad; nevertheless, Great Britain and Ireland produce many, nor are these of small importance. First, perhaps, in rank amongst the number of our indigenous medical plants comes purple foxglove (*Digitalis purpurea.*) Foxglove leaves are precious to the medical man. I perhaps may be justified in numbering digitalis amongst the sheet-anchors of physic; at any rate, it very nearly approaches that value. The great medical, or rather the physiological, peculiarity of digitalis is that it lessens the energy of the heart's action. Of all animal organs the heart is hardest worked. From birth to death, no matter how long protracted the period of life may be, the heart must go on working. Just think what the heart has to do; expanding, collapsing, pumping and palpitating, without a moment's rest. One might think this hard and continuous work might well prevent the heart from pumping blood too furiously. Not so. Occasionally the walls of this member become preternaturally thick and strong; the heart itself inordinately vigorous, wild, and turbulent; driving blood through the arteries with unwonted force. What should you expect under these circumstances? Suppose we place the matter in this light. You or I have a garden syringe, a strong syringe, but the pipes attached to it are weak. If the syringe be gently used, all goes well, and there is no leakage, no rupture, no escape of water, except by the nose or jet through which its escape was intended. You caution your gardener to work the piston gently; you tell him the pipes are weak—that too much energy on his part will burst them. Digitalis conveys this sort of order to an overworking (hypertrophied) heart; and what is more to the purpose, it causes the order to be respected. Of course it should only be used under the order of a medical man.

On some light and sandy knoll, shaded by overhanging brushwood from extreme fervour of the solar rays, the pedestrian through our bye-ways occasionally meets with the henbane plant (*hyoscyamus*). Henbane leaves furnish a valuable agent to the repertory of physic-stuff, or materia-medica. The juice of henbane leaves is either evaporated to an extract of which pills are made, or the leaves themselves, being digested with spirit, yield a tincture. When properly administered, henbane diminishes pain and causes sleep. It is not so powerful in these respects as opium, but is devoid of some bad consequences which occasionally follow the administration of the latter.

Hiding in shady places, too—but those more damp, and earthy, and rich than the places chosen by henbane—the handsome though fearful belladonna, or deadly night-shade, rears its lurid head and ripens its cherry-like fruit. Every part of this vegetable is terribly poisonous, and the active principle, which can be extracted from it by chemical means, is one of the most virulent bodies known. Preparations of belladonna are used both medically and surgically. To the surgeon, however, belladonna is of major importance: he employs it to prepare the eye for various surgical operations.

Monkshood (*Aconitum napellus*) is frequently to be met with in our flower-gardens—more often, perhaps, than desirable. Roots of this plant have been frequently mistaken for horseradish roots, and poisoning and death have resulted from swallowing their shavings. Beyond the circumstance of whiteness, which is common to both roots, there is not, however, the remotest similarity between them. From every part of the monkshood an alkali—or, as some will choose to call it, alkaloid—is extracted, which, though possessed of dangerous properties, is an agent of great value to the medical man in alleviating pain.

Hemlock (*Conium maculatum*) is endowed with properties the very reverse of monkshood. The latter destroys sensation, not motion; but hemlock, or rather its active principle, "conia," leaves sensation intact, but destroys the ability to move.

Amongst the powerful medicinal vegetables which grow at home, and which contribute to the resources of physic, meadow saffron (*Colchicum autumnale*) should not be omitted. Its active principle is also an alkali or alkaloid, highly poisonous, but nevertheless endowed with great controlling powers over gout, rheumatism, and certain other diseases. We are rapidly exhausting the list of medicines of British vegetable growth—I mean vegetable bodies of powers generally and strongly accredited—bodies having each its recognised place in the Pharmacopœia, and each possessing an energy so violent, that it ought not to be used except under the condition of medical sanction and advice. The medical resources of British vegetables must not, however, be estimated by the pharmacopœial list. Many British vegetables are capable of yielding good medicines, which they simply do not because agents still better are available. Thus, honeysuckle berries have somewhat the nature of jalap; and the root of the common violet would make no bad substitute for ipecacuanha.

CHINESE-SHAPED POEMS.

The French had once a fashion of writing and printing what were called shaped poems, in which (when in type) the forms of a lady's fan, a bottle, a wine-glass, etc. were neatly imitated. This, with sad torture to the verse, was done by shortening or lengthening the lines, according to the outline of the form to be filled up. Thus, a number of short lines would go to make up the neck of the bottle or decanter; while others, by being gradually lengthened, would produce the shoulder, the body, and other parts. Plenty of specimens are to be found in French books of the seventeenth century, and tricks of the same kind have been performed in Italian and in English. If the reader will take up any of those irregularly-shaped compositions which go under the name of Pindaric Odes, he will see what a variety of queer shapes are to be formed by drawing a pencil round the edges of the verses or lines, which are now long, now short, now long again for a series of lines, then short again for a succession, and so on.

The Japanese sometimes write poetry in the Hirakana character, arranging the letters in the form of a man's head or entire person, and give the reader a profile of the poet at the same time that they give him a stanza or stanzas of his poem. This is carrying shaped poetry to a far greater length than was ever known in Europe.

The Chinese also have their shaped poems; but it is to be noted that in these the shapes or forms are not filled up by lines of different lengths, but are produced merely by arranging characters in outline. We have before us a popular shaped ballad, which at the first glance would be taken only for the rude outlines of a cow with a boy leading it. But if you look closer you see that the rough lines are formed of distinct Chinese characters, which unite into a meaning and even into rhythm. With the cow, you must begin your reading at the left shoulder, and proceed by heptameters round to the tail. The herdboy's song begins with the right hand of the figure. The ballad is found in the eighth volume of a Chinese collection, entitled "Family Gems," but being slightly varied, it is sold in the streets by begging pedlars and Buddhist priests. The cow part of the ballad is called "The Cow's Complaint." Being literally translated, the poor cow speaks thus:—

> "Please, noble sir, hearken to my tale and all my complaints;
> In the wide world none have sorrows like the poor cow."

And after this commencement, in the style of "Pity the sorrows of a poor old man," she goes on to deplore that she is made to work hard at the plough, is flogged with whips made of hard hide, and much abused with brutal words; that she never gets her fair share of pasture, or food, or drink; that her master, after working her so the ears to which they were directed. Some of the crowd immediately surrounding us, indeed, looked up with surprise; but probably they imagined that the outlandish ejaculations of the Feringhi Sahib were indicative of approbation and delight; for they grinned, nodded their heads approvingly, and shouted in their turn.

But when, in the first tumult of his passion, the Sahib was rushing forward to interpose his authority, and—as he afterwards acknowledged—to drag his groom from the hands of the tormentors, the case might have assumed a far more serious aspect. But at this instant his motions were impeded and his steps arrested, first of all by a strong hand laid upon his arm, and then by a deep-toned voice, *in English*, falling upon his ear—

"Is the Sahib mad? or has he a charm against the daggers of the heathen?"

There was nothing remarkable in the words themselves, perhaps, excepting their good sense, and their appropriateness to the occasion; but there was something startling in their tone and tongue, which caused Mr. Dalzell to postpone his hasty purpose until he had confronted the speaker.

He turned suddenly round, then—and so did I —to meet the dark and piercing gaze of a Mahomedan fakir, or one who appeared to be such, by the ragged and neglected condition of his garments, and other marks which I need not particularize, by which these gentry are pleased to distinguish themselves. The disguise was not so complete, however, as to puzzle us long as to the pretended fakir's identity: and even while he gazed upon us—or rather upon my patron—in stern rebuke, we simultaneously pronounced the name— "*Maazulla!*" "MAAZULLA!"

"What brings Maazulla here, and in this strange counterfeit?" demanded Mr. Dalzell, somewhat hastily.

"Will it please the Sahib to permit yonder idolater to swing at his pleasure, and to accompany his poor moonshee out of the hearing of the heathen crowd, whom may Allah confound in their idolatrous devices?"

"Assuredly," said my patron, hurriedly and with agitation; "but first, Maazulla, as you hope hereafter to cross the bridge which is fine as a hair and sharp as a sword, tell me truly—is Zillah—?"

"Blaspheme not, I pray you, Sahib," replied Maazulla, calmly, "and be content. The Sahib's child is in health and safety."

"It is enough; now lead on, Maazulla."

ANOTHER DOSE OF PHYSIC.

It is from beyond the seas that the richest stores of the vegetable materia medica are derived. Opium, Peruvian bark, jalap, scammony, colocynth, and ipecacuanha belong to the list of highest medicinal agencies. Opium is the inspissated juice of the white poppy (*Papaver Somniferum*), a vegetable which, though it appears to thrive perfectly well in this climate, does not, except under the influence of a warmer sun than ours, produce opium of good quality. Like monkshood, deadly nightshade, and other medicinal vegetables which I have mentioned, the active principles of opium are alkaline in character. The chief alkali possessed by opium, and in comparison with which all others are unimportant, is morphia—a material which is now extracted and administered separately, instead of the original opium. The well-known fluid, laudanum, is formed by exhausting the soluble parts of opium with spirits of wine. The best opium of English commerce is brought from Asia Minor, and is known by the appellation of "Turkey opium;" besides which there are Egyptian, Persian, and East Indian opium. Nearly all the latter, however, is sent to China.

Few medicinal agents of vegetable growth are equal in importance to cinchona, or Peruvian bark, originally called Jesuits' bark, on account of its having been introduced to Europe by certain Jesuit missionaries. Count Cinchon was amongst the earliest of its European patrons, whence originated the term, "Cinchona bark." Like opium, cinchona bark depends for its efficacy on the presence of numerous alkaline bodies, of which that termed quinine, quinina, quina, and sometimes china, is the chief. Quina is now justly regarded as one of the most important agents of the materia medica. It is never given in the condition of simple quina, owing to its insolubility in that form. It is always administered in combination with an acid, generally sulphuric acid (oil of vitriol), constituting the beautiful feathery crystals known as sulphate of quina. Cinchona trees and coffee plants belong to the same botanical family—the natural order *Caffiaceæ*—whence some idea may be formed of the obligations we are under to that department of the vegetable kingdom. Though cinchona bark, and its active principle quina, do not possess a sufficient amount of energy to warrant their being numbered with poisons, few vegetables now used in medicine had to run the gauntlet of so much opposition, before its virtues were finally conceded. Much of the prejudice against it arose from the circumstance of its introduction to Europe through the Jesuits. Quina has now been discovered about thirty-seven years; and every person is convinced that the efficacy of cinchona bark is due to its presence. It was otherwise once; and here may be mentioned a curious instance of evidence wrongly used. Practically, it so happens that when infusion of oak bark is poured into infusion of cinchona bark, a white clotty mass falls. A result, similar in appearance, takes place when infusion of oak bark is poured into a solution of glue or isinglass (gelatine). Led away by false analogies, the conclusion was once arrived at, that gelatine was the active principle of cinchona bark, and gelatine was actually substituted for it in the treatment of ague. The most curious fact in relation to this circumstance has to be told: gelatine was not only extensively tried, but was said to have been efficient. So far may people be led away, when their judgment is warped by preconceived opinions.

Ipecacuanha, jalap, and scammony are all three obtained from convolvulus plants. The two former consist of the roots themselves without preparation; the latter is the thickened exudation of the plant from an incision effected near the root. Jalap and ipecacuanha are both American vegetables; scammony is Asiatic. Amongst the most interesting subjects of botanical consideration is the similarity of medical properties which extends through a family of plants botanically related. Three members of the convolvulaceæ we have already seen to yield three of our most important medicinal agents. Generalizing on the medicinal properties of the family convolvulaceæ, we may say that they are all characterised by purgative and emetic qualities. So true is this remark, that even the common white convolvulus which springs up as a weed in England, and which an Englishman relentlessly destroys, yields a white milky juice when cut into, and the juice being allowed to thicken, forms a substance not unlike scammony in general medical qualities.

Rhubarb is an important medicinal agent of the vegetable materia medica. That known in commerce as Turkey rhubarb is the best, though it neither grows in Turkey nor comes to us through Turkey. Strangely enough, botanists are not even now cognizant of the exact plant which yields the so-called Turkey rhubarb. All that we know respecting the plant is, that it belongs to the natural order *Polygonaceæ*, the same natural family which comprehends the dock, that it grows somewhere in Thibet, near to the confines of China, and that the best specimens come to us overland through Russia. Rhubarb is a very useful though not an heroic medicine. The physician does not usually seek its aid for combating any grave disease, but resorts to it for the cure of mild and chronic maladies. Few medicinal bodies of any power at all, admit of being less abused than rhubarb; hence it has become a safe and a favourite domestic medicine. I dare say I shall now frighten some mammas when I affirm that every competent dose of rhubarb holds a large quantity of oxalic acid—quite enough to poison any person swallowing the dose were it not for the following circumstance. Rhubarb holds oxalic acid as a natural constituent; true, but the oxalic acid is rendered insoluble by combination with lime, and it is a rule without one exception that all absolutely insoluble bodies are totally inert.

Another vegetable substance which the medical practitioner could not do well without is colocynth, or bitter apple; not that it has any claim to be called an apple, further than possessing the general rounded contour of that fruit. Colocynth, like elaterium, is the fruit of one of the cucurbitaceous or gourd tribe, many of which have a tendency to secrete a bitter purgative juice; even the edible cucumber is apt to be bitter at times. Senna comes to us from Egypt and the East Indies; squill is the bulb of the scilla maritima, one of the lily tribe growing in sandy places on either shore of the Mediterranean. Do not associate sweet odour as of necessity belonging to the lilies, for onions, and garlic, and shalot are, botanically speaking, lilies too: neither is it permitted you to believe that lilies are necessarily little retiring plants bearing lowly flowers. Perhaps the most gigantic tree in the whole world is a lily—the great dragon-tree of Orotava, in the Isle of Teneriffe. A physician would probably concede that I have nearly exhausted, in the preceding description, the heroic medical plants: were I to set about an enumeration of the mere outsiders there would result far too long a tale. Palms, olives, palma christi, and croton tiglium yield us oil. The palm tribe also furnishes much of the catechu of commerce. Several species of the acacia tribe yield gum acacia, usually termed gum arabic, though no variety of it comes from Arabia. Switzerland furnishes us with that agreeable tonic, bitter gentian; South America with cascarilla bark; Iceland with the gelatinous lichen to which we give the name Iceland moss. The Dutch East Indian islands almost exclusively furnish the spices, all dependent for pungency on the presence of sweet-smelling volatile oils. Most of the delicate perfumes—agents which take an intermediate position between medicine and perfumery—come from the south of France. Nevertheless, patchouli is Asiatic, and vanilla Central American; and oil of lavender, extracted from British plants, is superior to any other.

All the substances already treated of, whether derived from vegetables or animals, are distinguished by one general characteristic—they cannot be, or rather none of them have hitherto been, made by chemical processes. The only source for obtaining them has hitherto been the animals and vegetables which secrete them naturally. Chemists do not despair of making some of these things hereafter; that aspiration being apparently warranted by much that chemists have accomplished within late years. The first triumph of chemistry in this direction was the artificial manufacture of the odorous principle of meadow-sweet (*Sperœa almaria*), and it has been subsequently followed by many others. Valerian root, sometimes employed in medicine, has a strong odour, referable ultimately to valerianic acid: that acid is now extensively made without employing one particle of the valerian root. The busy little insect the ant is known to inflict painful bites on the human skin, the pain of which depends upon the injection of a peculiar acid, something like vinegar, and known as formic acid. Ants secrete this formic acid, and chemists are able to extract it from them; but no chemist would now take the trouble; he can prepare formic acid much more readily by distilling a mixture of oil of vitriol with manganese and starch. Rhubarb, as we have seen, contains oxalic acid readily formed; so does the vegetable called "sorrell," and so do many other vegetables; but it would go hard with calico printers, who use oxalic acid extensively, if it could not be got more readily and more plentifully than from these sources. Practically, oxalic acid is made by boiling a mixture of aquafortis and treacle. Apple pips contain prussic acid, so do bitter almonds, and also laurel leaves and peach kernels; but the chemist gets *his* prussic acid out of the dust-heap—out of bones and hoofs, old woollen rags, discarded boots, gloves, and meat fragments. Everybody almost has long since been made aware that the odorous matter of pine-apples, apples, jargonelle pears, and certain other fruits, can be made artificially; not something like the things, but the very things themselves; and curiously enough the chemist, strange fellow that he is! makes some of the most exquisite of these out of rancid butter!

The remaining medicines which my space permits me to touch upon, are known as chemicals; they all can be and are prepared by chemical processes, thereby distinguishing them from the preceding, which are sometimes known as galenicals. Oil of vitriol is made by effecting the combination of brimstone and oxygen, one of the gases we breathe; aquafortis is a compound of nitrogen and oxygen, and spirit of salt of hydrogen and chlorine. Iodine is got from sea-weeds, bromine from sea water; calomel is a preparation of mercury, which metal presents numerous other contributions to the materia medica stores. Antimony is chiefly valuable for yielding tartar emetic; and arsenic, though dangerous, is not to be despised. Gold yields several good medical agents, which are rarely used; gilded pills are not unusual, though the metal has no real service here. Silver is a metal of terrible energy: combined with oxygen and aquafortis, it yields the lapis infernalis, or lunar caustic—a material which the surgeon could not dispense with, and which the doctor would be glad to use if it had not the disagreeable trick of turning his patients permanently blue—no great disparagement, perhaps, to the subjects of his Majesty Soulouque, or the king of Dahomey, but ineligible for fair-skinned ladies and gentlemen. Iron, too, contributes to the stores of mineral materia medica; so do copper, bismuth, barium, calcium, and our old friend aluminium, without whose co-operation the doctor would have no alum. Chemists do not go to Epsom water for their Epsom salts, far less to the city of Magnesia; they make it now by the ton from a kind of limestone. Chalk enough might be obtained, you would think, out of the Dover cliffs; but doctors are fastidious in the matter of chalk, and prefer that which has been made artificially. Alcohol is procured from the distillation of such fermented vegetable liquors as originally held sugar; so is vinegar occasionally: much vinegar, however, is made out of hard billets of wood; and sugar could be made from sawdust, if people desired, or from old linen and cotton rags, if people could not turn them to better account in the manufacture of paper. But I wish some enterprising manufacturer would only remove from paper mills every scrap of cotton rags. The latter would make decent sugar of a certain kind; but it makes abominable paper. The man who turned out the paper on which I now write had a decided predilection for cotton, and he attempts to deceive me by mixing plaster of Paris with the cotton pulp. Potash and soda, in various states of combination, are valuable to the doctor; need I say they are related to the metals potassium and sodium? Need I say, too, that potash is almost exclusively made from wood ashes, and soda from common salt? Hartshorn (ammonia) was originally made from the horn of the hart, but it is long since any antlered monarch of the woods has fallen a victim to the hartshorn maker. Ammonia is now made from old horns, bones, woollen rags, animal matters, in point of fact the same materials which, by another treatment, furnish prussic acid. Large quantities of both ammonia and prussic acid, however, are now made from the refuse of gas works. Think of this, ye delicate ladies!

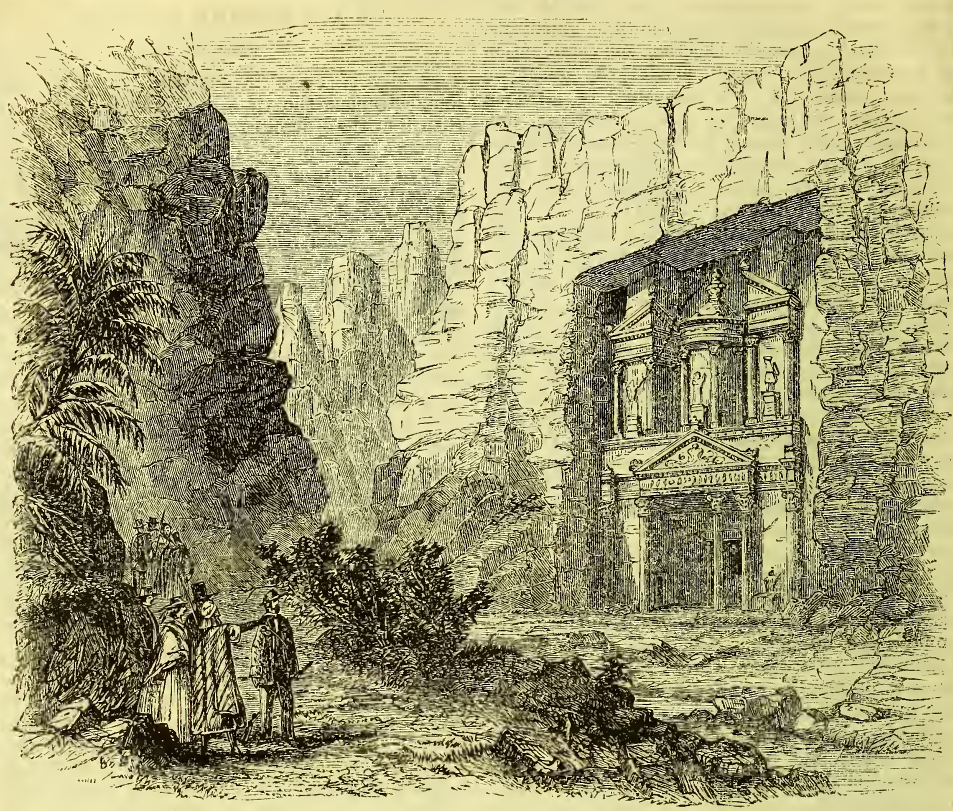
Thus, I have hurried over the sources of physic, until, I fear, the reader has been dosed with more than enough; still space, and not subject, oblige me to conclude.

AN ADVENTURE IN PETRA.

PART II.

The city of Petra is supposed to have been founded about the time of Abraham, for it was then that the Edomites first began to assume importance as a nation. It was taken by Amaziah, king of Judah, but did not remain long in his possession; and very soon afterwards the original inhabitants themselves, the Idumeans, were expelled by a new tribe from the south-east, the Nabathæans, who, from the account given of them by Diodorus Siculus, appear to have very much resembled the modern Bedouins in character and mode of life. Petra now became the capital of this people, who succeeded in maintaining their independence against numerous invaders, until the time of the Roman Emperor Trajan, by whom they were finally subdued. Petra afterwards became a Christian city, and the see of an archbishop; but when the false prophet Mahomet began his career of conquest, this city was one of the first to submit to his arms. It is now completely deserted, and its present desolate condition furnishes a wonderful proof of the truth of prophecy. For instance, Isaiah predicted that "none shall pass through it for ever." And this is now undoubtedly the case, for Petra is the universally shunned of travellers; and though formerly the high road of commerce from the east to the west, its ravines now only occasionally resound with the hurried footsteps of a Bedouin, or a chance wayfarer. Indeed, the whole of the prophecy from which the above words are taken has been literally fulfilled, and travellers who read its awful denunciations on the spots to which they refer, are constrained to acknowledge that not one jot or one tittle has failed of accomplishment. As Ezekiel says, "All who pass by her are astonished." I may add that the greater part of the ruins date from the later ages of the Roman empire, and though very magnificent and profusely adorned with sculpture, evince a debased and corrupt taste in architecture, very different to the noble ideas embodied in the temples and monuments of ancient Greece.

When we returned to breakfast, after the explorations described in the previous paper, we were disposed to exult in the freedom from trouble which we seemed likely to enjoy. Hitherto not an Arab had made his appearance, and already, in imagination, we were safe on the other side of the dreaded pass, congratulating ourselves on having outwitted the robbers who inhabit these fastnesses. With these feelings of false security we started again, about 10 A.M., to complete our researches in the valley. We first visited the Khuzneh, the most famous sight of Petra—a noble temple, or palace, with a richly decorated façade cut out of a towering mass of rose-coloured sandstone. This façade is about a hundred feet high, and is surmounted by a colossal urn, which the Arabs imagine contains the "treasures of king Pharaoh." In the hope of gaining this treasure, they have fired so frequently at the urn, that its surface is now pitted with the dints of innumerable bullets. They have also tried to reach the coveted prize by cutting holes for the hands and feet in the smooth face of the precipice, but appear to have given up



THE KHUZNEH, AS SEEN FROM THE ENTRANCE TO THE SÎK.*

in despair at a height of some seventy-five feet. It is impossible, by words alone, to give an adequate idea of the noble appearance of this Khuzneh; a cry of admiration involuntarily escaped our lips as we caught the first glimpse of it on emerging from a fragrant thicket of oleanders, tamarisks, and wild fig trees. We spent fully an hour in studying it from various points of view, and anticipated with great interest a second visit on our return from the Sîk, which we now proceeded to explore.

The Sîk is a long winding ravine, of a width varying from 12 to 20 feet, and overhung by stupendous crags of a deep crimson hue, some of them rising to a height of nearly 250 feet. The sublimity of this defile is beyond conception, but it is also not devoid of a kind of beauty; for it is filled with dwarf trees and shrubs; delicate ferns and creepers hang from its walls of rock; and a clear cool brook runs amongst the stones in its bottom, forming here a pool, and there a mimic cataract, and then perhaps diving for a time from view beneath a mass of rock or an overhanging canopy of foliage and flowers.

We had proceeded for about a mile and a half up this ravine, and had just come in sight of a broken Roman arch that spans its further extremity, when, on turning a corner, we were struck dumb by the unexpected apparition of some twenty ruffianly-looking Bedouins, armed with guns, swords, and clubs, and running to meet us with wild yells and wilder gestures. We were unarmed; but had we been otherwise, resistance would have been out of the question, for we could see and hear numbers of fresh assailants scrambling over the rocks in our direction, and we were presently surrounded and made prisoners by as ferocious and ragged a set of bandits as I ever wish to come in contact with. They forthwith made us turn back, and tumultuously hurried us in the direction of our camp, shouting and firing their long guns in the air, till the lofty precipices of the Sîk re-echoed with a din almost sufficient to have split the solid rock. It was about noon when our researches among the ruins of Petra were brought to this sudden and unexpected termination.

Our friends, the party of twelve, must have received an early intimation of the approaching danger, for on our arrival at the camp, we found them mounted and on the point of moving off. The Arabs were as yet hardly in sufficient force to prevent their departure, but they might have caused them considerable annoyance and even injury; therefore it was thought advisable to conciliate their forbearance by the payment of a sum of money, amounting to about ten pounds. The Arabs were the more ready to accept this, inasmuch as they felt that we were completely in their power, and, with all our tents and baggage, formed a far more valuable prey than our lightly-

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* This engraving and the one on the opposite page are copied from Bartlett's "Forty Days in the Desert," by permission of the publishers, Messrs. Hall and Virtue.